IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

ROBERT BOSCH LLC, Plaintiff, v. JAMAK FABRICATION-TEX LTD. d/b/a JAMAK FABRICATION, INC. also d/b/a JAMAK GLOBAL WIPERS, Defendant.	)	C.A. No. _____ **JURY TRIAL DEMANDED**

COMPLAINT

Plaintiff Robert Bosch LLC, through its attorneys, for its complaint against defendant Jamak Fabrication-Tex Ltd. d/b/a Jamak Fabrication, Inc. also d/b/a Jamak Global Wipers, avers as follows:

1. This action arises under the patent laws of the United States, Title 35 of the United States Code (for example, 35 U.S.C. §§ 271, 281, 283, 284, and 285), as hereinafter more fully appears. This Court has jurisdiction over the subject matter of the action pursuant to 28 U.S.C. §§ 1331 and 1338.

2. On September 20, 2005, United States Letters Patent No. 6,944,905 (attached as Exhibit A) were duly and legally issued for an invention in a wiper blade. Plaintiff is the owner of those Letters Patent.

3. Defendant has for a long time past been and still is infringing those Letters Patent by making, importing, offering for sale, using, and selling wiper blades embodying the patented invention, such as the Glider Beam Blade, and by inducing and contributing to infringement, and will continue to do so unless enjoined by this Court.

4. On December 27, 2005, United States Letters Patent No. 6,978,512 (attached as Exhibit B) were duly and legally issued for an invention in a wiper blade. Plaintiff is the owner of those Letters Patent.

5. Defendant has for a long time past been and still is infringing those Letters Patent by making, importing, offering for sale, using, and selling wiper blades embodying the patented invention, such as the Glider Beam Blade, and by inducing and contributing to infringement, and will continue to do so unless enjoined by this Court.

6. Plaintiff has given notice to Defendant of its infringement.

7. Defendant's infringement has been and is willful.

WHEREFORE, Plaintiff demands an injunction against continued infringement, an award of damages, an award of treble damages, an award of attorneys' fees, an assessment of interest and costs against Defendant, and such other relief as the Court may find just and proper.

Jury Demand

Plaintiff demands a trial by jury.

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Dated: October 26, 2007
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EXHIBIT A

US006944905B2

(12) **United States Patent**
De Block et al.

(10) **Patent No.: US 6,944,905 B2**
(45) **Date of Patent: Sep. 20, 2005**

(54) **WIPER BLADE FOR CLEANING SCREENS IN PARTICULAR ON MOTOR VEHICLES**

(75) Inventors: **Peter De Block**, Halen (BE); **Peter Wijnants**, Wezemaal (BE)

(73) Assignee: **Robert Bosch GmbH**, Stuttgart (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 313 days.

(21) Appl. No.: **10/048,202**

(22) PCT Filed: **Apr. 4, 2001**

(86) PCT No.: **PCT/DE01/01304**

§ 371 (c)(1),
(2), (4) Date: **Apr. 22, 2002**

(87) PCT Pub. No.: **WO01/92073**

PCT Pub. Date: **Dec. 6, 2001**

(65) **Prior Publication Data**

US 2002/0133897 A1 Sep. 26, 2002

(30) **Foreign Application Priority Data**

May 29, 2000 (DE) 100 26 419
Sep. 12, 2000 (DE) 100 44 913

(51) **Int. Cl.**[7] **B60S 1/38**
(52) **U.S. Cl.** **15/250.201**; 15/250.43
(58) **Field of Search** 15/250.201, 250.43, 15/250.44, 250.361, 250.48

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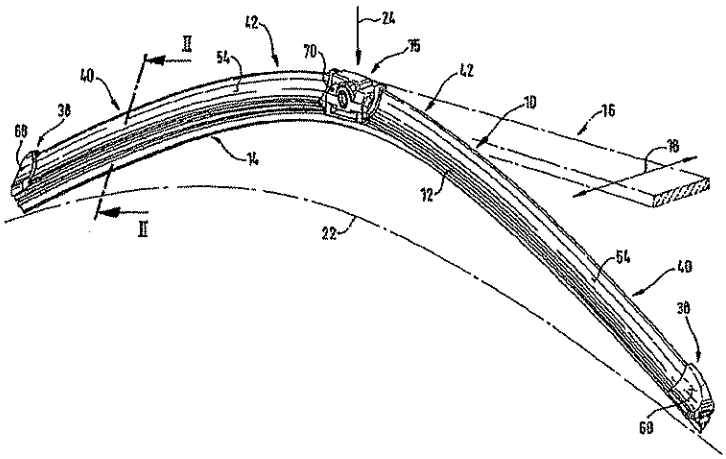
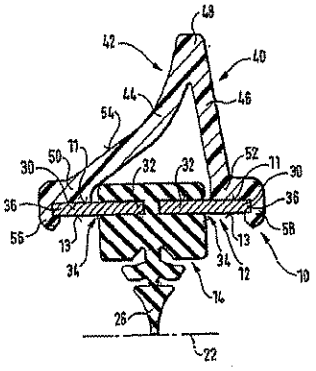
Primary Examiner—Gary K. Graham
(74) *Attorney, Agent, or Firm*—Michael J. Striker

(57) **ABSTRACT**

A wiper blade for cleaning motor vehicles is proposed, which is provided with a band-like, elongated, spring-elastic support element (**12**). The lower band surface (**13**) of the support element (**12**) oriented toward the window (**22**) has an elongated, rubber-elastic wiper strip (**14**), which can be placed against the window (**22**), disposed on it so that the longitudinal axes of these two parts are parallel and the upper band surface (**11**) of the support element (**12**) has a wind deflection strip (**42**) disposed on it, which extends in the longitudinal direction of the support element, is provided with an attack surface (**54**) oriented toward the main flow of the relative wind, and is comprised of an elastic material. A considerable weight savings for the wiper blade is achieved if the wind deflection strip (**42, 142,** or **242**) has two diverging legs (**44, 46**), viewed in cross section, which are connected to each other at a common base (**48**) and whose free ends (**50, 52**) oriented toward the window (**22**) are supported on the wiper blade (**10**), and the attack surface (**54**) is embodied on the outside of the one leg (**44**).

19 Claims, 4 Drawing Sheets





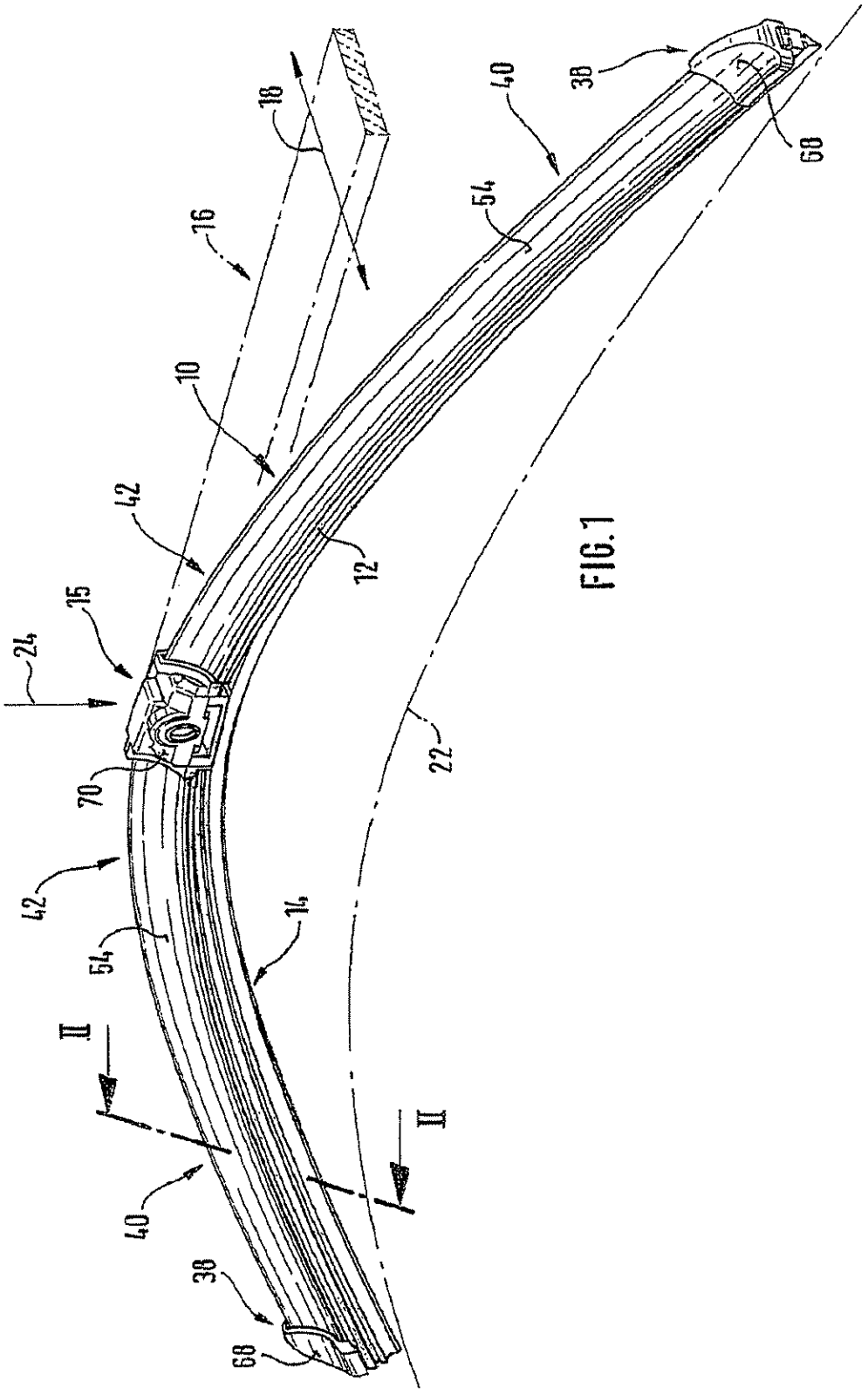
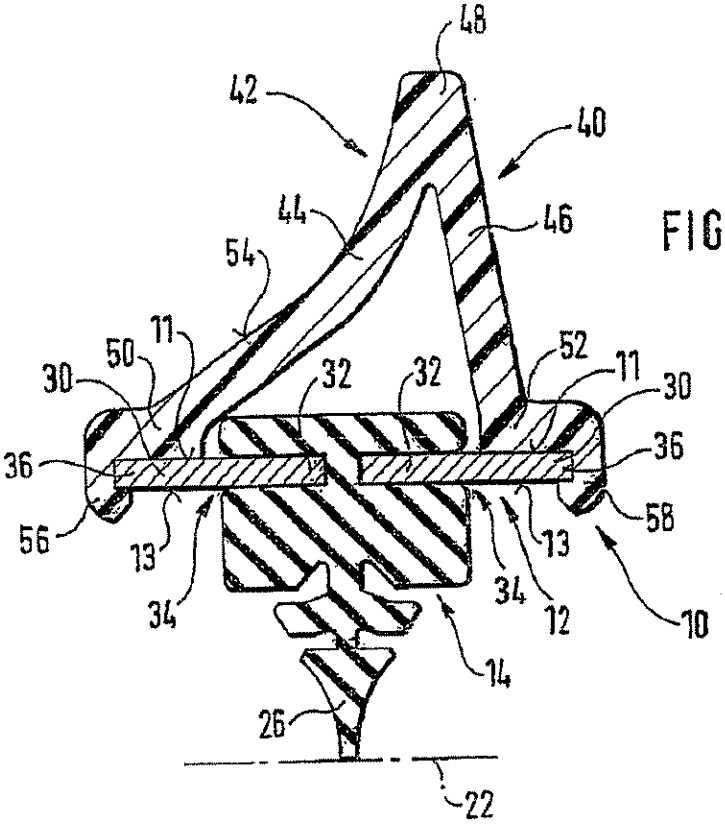


FIG. 1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11
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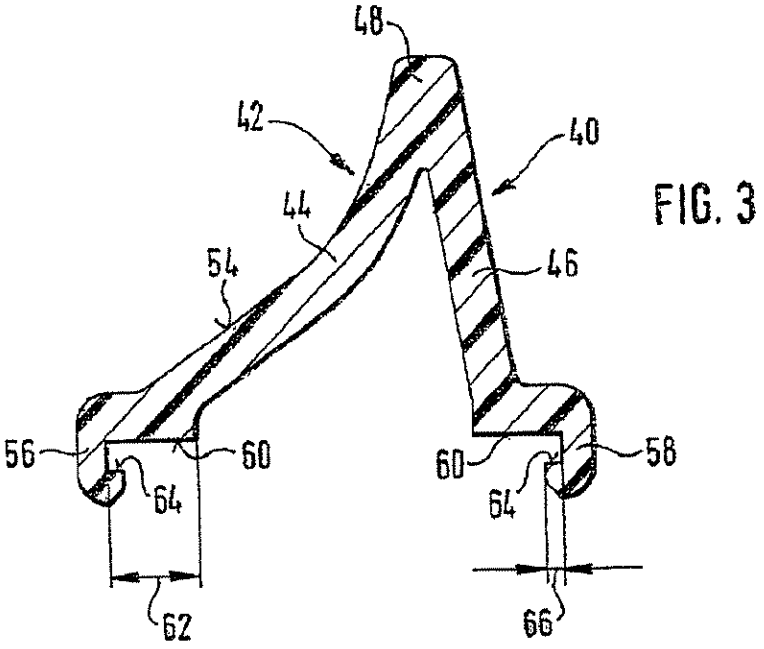
26
22

FIG. 2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42
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44
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56
60
64
62
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58
64
66

FIG. 3

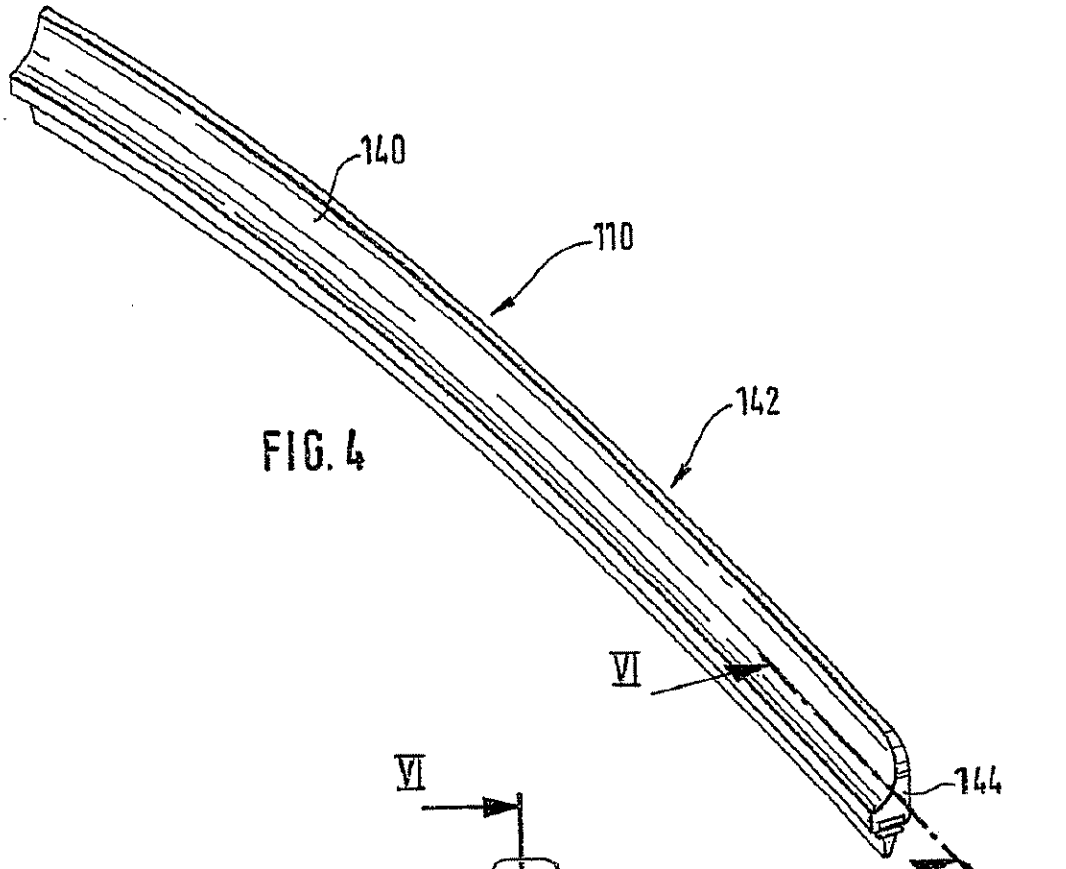
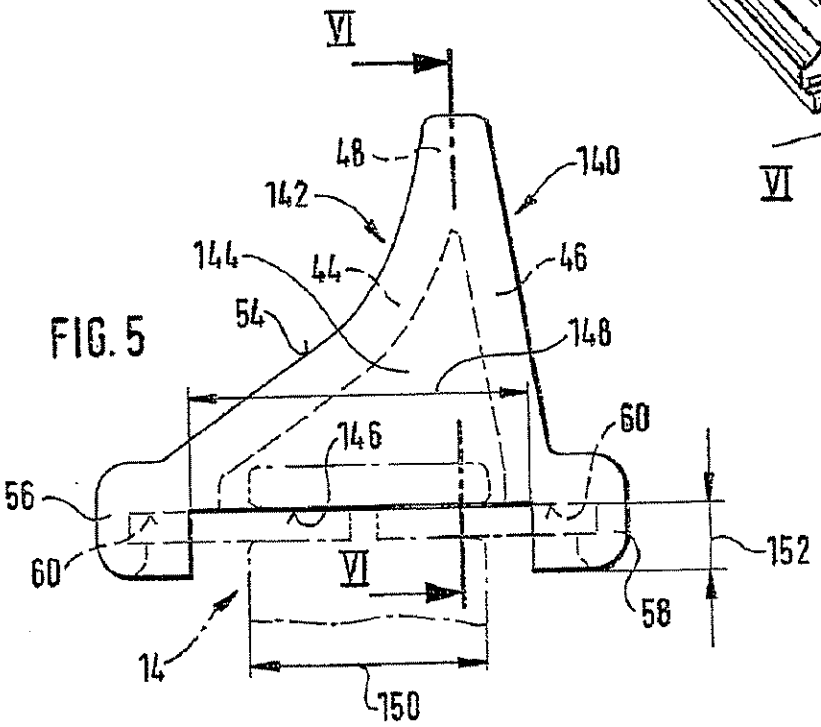

140
110
142
VI
144
VI
V

FIG. 4


VI
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142
144
44
46
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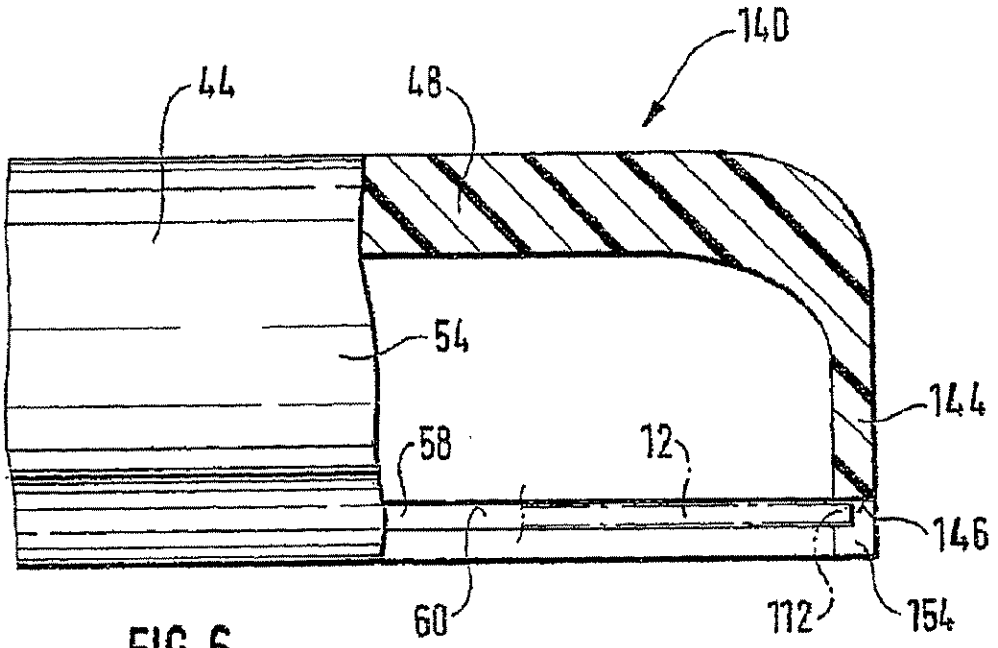
148
60
146
56
60
VI
152
58
14
150

FIG. 5


140
44
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144
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12
146
60
112
154

FIG. 6

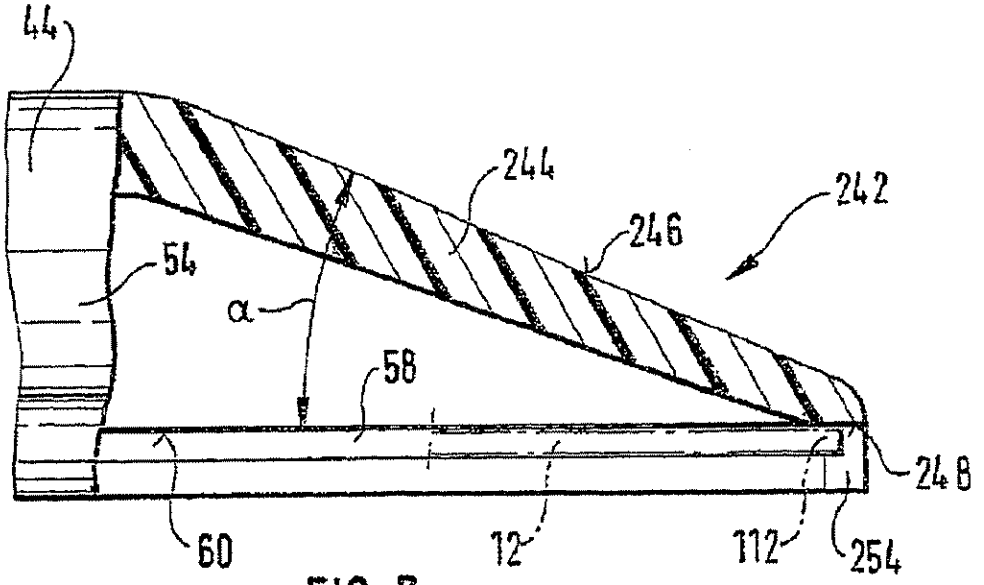
44
244
242
246
54
α
58
248
60
12
112
254

FIG. 7

WIPER BLADE FOR CLEANING SCREENS IN PARTICULAR ON MOTOR VEHICLES

BACKGROUND OF THE INVENTION

In known wiper blades, the purpose of the support element is to assure as uniform as possible a distribution of the wiper blade pressure against the window, which pressure is exerted by the wiper arm, over the entire wiping field wiped by the wiper blade. Through an appropriate curvature of the unloaded support element—i.e. when the wiper blade is not resting against the window—the ends of the wiper strip, which is placed completely against the window during operation of the wiper blade, are loaded toward the window by the support element, which is stretched in this state, even though the curvature radii of spherically curved vehicle windows change with each wiper blade position. The curvature of the wiper blade must therefore be somewhat sharper than the sharpest curvature measured within the wiping field on the window to be wiped. The support element consequently replaces the expensive support bracket structure with two spring strips disposed in the wiper strip, as is the practice in conventional wiper blades (DE-OS 15 05 357).

The invention is based on a wiper blade. In a known wiper blade of this kind (DE 197 36 368), the wiper blade is provided with a so-called wind-deflection strip so that the airflow-induced tendency of the wiper blade to lift up from the window that occurs at high driving speeds is counteracted by a force component directed toward the window. To this end, the wind-deflection strip has a front side, which is embodied as an attach surface and is acted on chiefly by the relative wind during the reciprocating wiper operation. The cross section of the wind-deflection strip is approximately the shape of a right triangle, whose one leg is oriented toward the support element and whose hypotenuse represents the attach surface. This attach surface encloses an acute angle with the plane of the reciprocating motion of the wiper blade and with the surface of the window. The triangular profile used requires a relatively large amount of material for the manufacture of the wind-deflection strip, which is reflected in the costs for the wiper blade. Moreover, the weight of the wiper blade is considerably increased in an undesirable fashion. Namely, the increased mass, which must be accelerated in the reciprocating wiper operation, requires a more powerful drive unit and a more expensive design of the reciprocating mechanism connected to this drive unit. In addition, the profile-induced rigidity of a wind-deflection strip that is shaped in this way can impair the operating behavior of the support element and/or the wiper blade.

SUMMARY OF THE INVENTION

In the wiper blade according to the invention, the weight of the wind-deflection strip is considerably reduced by the cross sectional embodiment of an angular profile. Moreover, in addition to the savings in material, there is also a reduction of the mass being moved, with the resulting advantages with regard to the design of the drive unit and the reciprocating mechanism. In addition, the rigidity of the wind deflection strip is considerably reduced and as a result, so is its influence on the bending and elastic behavior of the wiper blade support element.

If the wiper blade part of a device, which is for connecting the wiper blade to a reciprocally driven wiper arm, is supported on the upper band surface of the support element in its middle section and an end cap is placed at both ends of the support element, then a simple installation of the wind deflection strip is produced when the strip is comprised of two sections, each of which extends between a respective end cap and the device piece.

In a modification of the invention, the profile of the cross section is the same over the entire length of the wind deflection strip. As a result, it can be manufactured in a particularly inexpensive manner using the extrusion process.

In a modification of the invention, the two legs of the wind deflection strip are connected to each other by a wall in the vicinity of the two wiper blade ends. With the use of a wind deflection strip of this kind, which is to be manufactured in an injection mold, the end caps to be placed at the ends of the support element or the wiper blade can be eliminated because this wall constitutes the end of the wind deflection strip. Furthermore, a wind deflection strip manufactured in this way can be arbitrarily shaped. It can also easily adapt to arbitrary shapes of the support element, for example when the support element has a cross sectional reduction in the longitudinal direction from the middle region toward the ends.

It is also possible to embody the tapering of the cross section of the wind deflection strip toward its ends in accordance with stylistic considerations. Thus on the one hand, it can be useful if the wall is aligned essentially perpendicular to the support element.

On the other hand, an attractively formed end of the wind deflection strip can also be achieved through a correspondingly oblique alignment of the wall in which an outside of the wall encloses an acute angle α with the support element. It goes without saying that each of the two ends of two sections belonging to a wind deflection strip can be embodied differently in accordance with the measures outlined above.

In certain applications, in order to simplify installation of the wiper blade, it can be advantageous if the wall is provided with a recess, which is open at the edge toward the window and whose width is greater than the depth of wiper strip in the vicinity of the support element and whose depth reaches to the upper band surface of the support element.

An operationally reliable support of the wind deflection strip on the wiper blade is achieved through attachment of the leg ends to the wiper blade.

Such an attachment to the wiper blade can be easily and inexpensively achieved by means of a glued attachment.

If the free leg ends of the wind deflection strip are attached, preferably glued, to the support element of the wiper blade, this assures a precise positioning of the wind deflection strip on the wiper blade.

The positioning is further improved if in the embodiment of the concept of the invention, the free leg ends of the wind deflection strip are provided, at least in sections, with claw-like projections, which encompass the mutually opposed outer edge strips of the support element.

When using wind deflection strips, which are provided with the above-mentioned end walls, it is useful if the claw-like projections extend from the leg ends into the vicinity of the wall and suitably encompass end regions of the support element.

The claw-like projections, which are used as positioning aids, offer particularly advantageous regions for the glued attachment.

For a particularly stable, operationally reliable attachment of the wind deflection strip to the support element, the claw

surface disposed on the upper band surface of the support element has a greater width than the claw surface engaging the lower band side.

The attack surface of the wind deflection strip is suitably embodied as a flute on the outer wall of the one leg.

In order to avoid an unfavorable flow progression of the relative wind sweeping past the wiper blade in the vicinity of the wiper blade ends, the end caps are provided with a flute, which extends in the projection of the flute of the wind deflection strip.

In order to counteract this disadvantage in the middle section of the wiper blade as well, the wiper blade part of the connecting device is provided with a flute, which extends in the projection of the flute of the wind deflection strip.

So that the distribution of the wiper blade pressure against the window by means of the individually designed support element is not significantly influenced by the wind deflection strip, the hardness of the material for the wind deflection strip is at most 40 percent greater than the hardness of the material for the wiper strip.

In this connection, it is particularly advantageous if the hardness of the material for the wind deflection strip is at most 20 percent greater than the hardness of the material for the wiper strip.

In many instances, it has turned out to be advantageous if the wiper strip has a Shore hardness A of between 64 and 71 and the wind deflection strip has a Shore hardness A of between 70 and 78.

Other advantageous modifications and embodiments of the invention are disclosed in the following description of exemplary embodiments shown in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective representation of a wiper blade according to the invention, with the wiper arm indicated with dot-and-dash lines,

FIG. **2** shows an enlarged cross section through the wiper blade along the line II—II in FIG. **1**,

FIG. **3** shows the cross section according to FIG. **2** through the wind deflection strip associated with the wiper blade, without the wiper strip and the support element,

FIG. **4** is a partial depiction according to FIG. **1** of a differently embodied wiper blade according to the invention,

FIG. **5** shows an enlarged view of the wiper blade according to FIG. **4**, viewed in the direction of the arrow V,

FIG. **6** shows an enlarged partial section along the line IV—IV through the end of the wind deflection strip associated with the wiper blade according to FIG. **4**, whose position is clarified in FIG. **5** by a line VI—IV, and

FIG. **7** shows a section according to FIG. **6** through another embodiment of a wind deflection strip associated with the wiper blade according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A wiper blade **10** shown in FIG. **1** has a band-like, elongated, spring-elastic support element **12** (FIGS. **1** and **2**), whose lower band side **13** oriented toward the window has an elongated, rubber-elastic wiper strip **14** attached to it so that the longitudinal axes of these two parts are parallel. On the upper band side **11** of the support element **12**, which is oriented away from the window, which support element is also referred to as a spring strip, the middle section of the

support element is provided with the wiper blade part **15** of a connecting device, with the aid of which the wiper blade **10** can be detachably connected in an articulating fashion to a wiper arm **16** indicated with dot-and-dash lines in FIG. **1**. The wiper arm **16**, which is driven to reciprocate in the direction of a double arrow **18** in FIG. **1**, is loaded in the direction of an arrow **24** toward the window to be wiped, for example the windshield of a motor vehicle, whose surface is indicated with a dot-and-dash line **22** in FIG. **1**. Since the line **22** is intended to represent the sharpest curvature of the window surface, it is clear that the curvature of the wiper blade, which is not yet under tension and rests with both of its ends against the window, is sharper than the maximal window curvature (FIG. **1**). As a result of the pressure (arrow **24**), the wiper blade **10** rests with its wiper lip **26** against the window surface **22** over its entire length. This causes a tension to be built up in the spring-elastic metal support element **12**, which assures a uniform contact of the wiper strip **14** and the wiper lip **26** over its entire length against the window surface **22** and assures a uniform distribution of the pressure (arrow **24**).

The particular embodiment of the wiper blade according to the invention will now be discussed in detail.

FIG. **2** shows that the support element **12** in the exemplary embodiment has two spring strips **30**, which are disposed in a common plane approximately parallel to the window surface **22**. The two spring strips **30** protrude with their mutually opposed inner edge strips **32** into longitudinal grooves **34** of the wiper strip **14**, which are open at the edges, and protrude from these longitudinal grooves **34** with external edge strips **36**. The two spring strips **30** are secured in their longitudinal grooves **34** by the part **15** of the connecting device in the middle region of the wiper blade and by end caps **38** disposed at each end of the wiper blade. To this end, these components **15** and **38** encompass the outer edge strips **36** of the spring strips **30**. Sections **40** of a wind deflection strip **42** are respectively disposed between the part **15** and each of the two end caps **38**. The disposition of the wind deflection strip **42** and its embodiment can be inferred from FIGS. **2** and **3**. The wind deflection strip **42** comprised of an elastic material, for example a plastic, and its two sections **40** rest against the upper band side **11** of the support element **12**. Viewed in cross section, the wind deflection strip **42** has two diverging legs **44** and **46**, which are connected to each other by a common base **48**. The free ends **50** and **52** of the legs **44** and **46** are oriented toward the window **22** and are supported against the wiper blade **10** or its support element **12**. An attack surface **54**, which is fluted in the exemplary embodiment, is embodied on the outside of the one leg **44** and the relative wind chiefly flows against this attack surface **54** during operation of the wiper device. The cross sectional form of the wind deflection strip **42** and/or of its sections **40** shown in FIGS. **2** and **4** is the same over the entire length so that these sections can be inexpensively extruded. At their free leg ends **50** and **52**, the sections **40** of the wind deflection strip **42** are attached to the wiper blade and/or to its support element **12**. Suitably, the free leg ends of the wind deflection strip **42** are glued to the support element **12** of the wiper blade **10**. To that end, the free ends **50** and **52** of the legs **44** and **46** are provided with claw-like projections **56**, **58**, which suitably encompass the mutually opposed outer edge strips **36** of the support element **12**. The surfaces of the claw-like projections **56**, **58** resting against the edge strips **36** serve as gluing surfaces with which the sections **40** of the wind deflection strip **42** are glued to the support element. For a particularly stable glued attachment, the claw surfaces **60** resting against the upper band side **11** of the support element

12 (FIG. 3) have a greater width 62 than the claw surfaces 64 engaging the lower band surface 13, whose width is labeled with the reference numeral 66 in FIG. 3. It can be inferred from FIG. 1 that the fluted attack surface 54 of the sections 40 also extends on the end caps 38 and on the part 15 of the connecting device. The fluting of the end caps 38 is labeled with the reference numeral 68 in FIG. 1, while the fluting of the component 15 is provided with the reference numeral 70. The wind deflection strip 42 or its sections 40 have a cross section that remains uniform over its entire length so that it can be inexpensively extruded.

FIGS. 4 to 6 show another embodiment of the wiper blade 110 according to the invention. Since the deviations from the wiper blade 10 relate solely to the wind deflection strip, FIG. 4 shows only a section of the wiper blade 110, which reaches from one end to the part 15 of the connecting device, which part is no longer depicted. The design of the wind deflection strip 142 associated with the wiper blade 110 corresponds to the exemplary embodiment described above insofar as its attachment to the support element 12 at the outer edge strips 36 of the support element spring strips 30 is concerned, so that the attendant details need not be discussed further. Therefore, the reference numerals that have been indicated in the embodiment described above will also be used below for the embodiments of the wind deflection strip 142 that have already been explained. Viewed in cross section, the wind deflection strip 142 likewise has two legs 44, 46, which are connected to each other at a common base 48. The free ends 50 and 52 of the legs 44 and 46 are likewise provided with claw-like projections 56 and 58, which suitably encompass the outer edge strips 36 of the spring strips 30. In this exemplary embodiment as well, the two sections 140 of the wind deflection strip 142, which are produced in an injection molding die, are glued to the support element 12 of the wiper blade 10. The claw-like projections permit the wind deflection strip to be simply clipped onto the support element and thus permit a precise positioning for the gluing process. Also, the glue points reliably overlap each other. In addition, a fluted attack surface 54 is likewise embodied on the leg 44 of the wind deflection strip 142 or on its sections 140 (FIG. 5).

Diverging from the exemplary embodiment according to FIGS. 1 to 3, the two legs 44 and 46 are connected to each other by means of a wall 144 at the wiper blade ends and at the ends of the sections 140 disposed there, which wall extends from the base 48 to the claw-like projections 56, 58. The wall 144 is aligned essentially perpendicular to the support element 12 and to the claw-like projections 56, 58 encompassing it.

As FIGS. 5 and 6 show, the wall 144 is provided with a recess 146, which is open at the edge oriented toward the window and whose width 148 is greater than the width 150 of the wiper strip 14 indicated with dot-and-dash lines in FIG. 5. The depth 152 of the recess 146 reaches to the upper band surface 11 of the support element 12. This can be conceptualized on the basis of the upper claw surface 60 in FIG. 5, which when the wind deflection strip is glued to the support element, rests against the upper band side 11 of the support element 12 or against the top of its spring strips 30. It can also be inferred from FIG. 6 that the claw-like projections extend from the ends of the legs 44, 46, into the vicinity of the wall 144 and suitably encompass the end regions 112 of the support element 12, which are indicated with dot-and-dash lines. In FIG. 6, the claw-like projection of the wall 144 of the section 140 has been labeled with the reference numeral 154. The claw-like projections 56, 58 in the exemplary embodiments according to FIGS. 1 to 3 and 4 to 6 are also used to cover the sharp, free end edges of the support element 12 and are used as a reliable placement aid for the sections 40 and 140 when they are glued to the support element 12.

FIG. 7 shows an alternative disposition of the wall 144 (FIG. 6). The wall 244 situated in the end region of the wind deflection strip 242 is disposed so that its outside 246 encloses an acute angle α with the support element 12. This can be conceptualized on the basis of the claw-like projection 58, which encompasses the support element when the wind deflection strip 242 is connected to it and rests with its claw surface 60 against the upper band side 11 of the support element 12. Also in this embodiment, the wall 244 and/or its claw-like projection 254 is provided with a recess 248, which corresponds in its disposition and dimensions to the recess 146 according to the embodiment in FIGS. 4 to 6. FIG. 7 also shows that claw-like projections 254 are likewise disposed on the wall 244, which suitably encompass end regions 112 of the support element 12 that is indicated with dot-and-dash lines.

So that the desired properties of the wiper blade are not influenced to an impermissible degree by the design of the support element, the hardness of the material for the wind deflection strip 42 is at most 40% greater than the hardness of the material for the wiper strip 14. It is particularly advantageous to limit this value to 20%. In practice, it has turned out that the most favorable results with regard to the wiping quality over a broad vehicle speed range are achieved if the wiper strip 14 has a Shore hardness A of 68 and the wind deflection strip 42 has a Shore hardness A of 72.

In this connection, the thickness of the legs 44 and 46 is also of particular importance in the matching of the selected hardness of the materials for the wind deflection strip and the wiper strip.

All of the exemplary embodiments share the common trait that the wind deflection strip 42, 142, or 242 has two diverging legs 44 and 46, viewed in cross section, which are connected to each other at a common base 48 and whose free ends 50 and 52, which are oriented toward the window 22, are supported on the wiper blade 10, where the outflow surface 54 is embodied on the outside of the one leg 44.

By contrast to the exemplary embodiments described above, though, instead of the wind deflection strip 42 having two sections 40, it is also conceivable for it to be made up of one piece that extends over and covers the device part 15. Naturally, in this case, the wind deflection strip must have at least one appropriate recess, which permits the articulating connection between the wiper arm and the wiper blade.

It is also conceivable that due to particular criteria, it can be quite useful for the wiper blade according to FIG. 1 or FIG. 4 to be provided with only one section 40 or 140 of the wind deflection strip, which is fastened to the wiper blade either in its region close to the reciprocation axis or its region remote from this axis.

What is claimed is:

1. A wiper blade for cleaning windows, comprising:

a band-like, elongated, spring-elastic support element (12), wherein a lower band surface (13) of the support element oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), disposed on it so that the longitudinal axes of these two parts are parallel, wherein the wiper strip can be placed against a window, and wherein an upper band surface (11) of the support element (12; 30, 30) has a wind deflection strip (42) disposed on it, which extends in the longi-

tudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, wherein the two diverging legs are connected to each other at a common base (48) and wherein free ends of the two diverging legs oriented toward the window (22) are supported on the support element of the wiper blade (10), and the attack surface (54) is embodied on the outside of the one leg (44) above the support element, and the legs (44, 46) form therebetween an angular hollow space that expands from an upper narrowest point of the base downwardly to the upper band surface of the support element (12; 30, 30) and are in contact with the upper band surface (11) of the support element said legs contacting the upper band surface at a location laterally spaced from said rubber-elastic wiper strip.

2. The wiper blade according to claim 1, wherein the profile of the cross section is the same over the entire length of the wind deflection strip (42).

3. The wiper blade according to claim 1, wherein the two legs (44, 48) of the wind deflection strip (142 or 242) are connected to each other by means of a wall (144 or 244) in the vicinity of the two wiper blade ends.

4. The wiper blade according to claim 3, wherein the wall (144) is aligned essentially perpendicular to the support element (12).

5. The wiper blade according to claim 3, wherein the outside (246) of the wall (244) encloses an acute angle (a) with the support element (12).

6. The wiper blade according to claim 1, wherein the free leg ends (50, 52) of the wind deflection strip (42, 142, or 242) are glued to the support element.

7. The wiper blade according to claim 1, wherein the free leg ends (50, 52) of the wind deflection strip (42, 142, or 242) are attached, preferably glued, to the support element (12) of the wiper blade (10).

8. The wiper blade according to claim 1, wherein the free leg ends (50, 52) of the wind deflection strip (42, 142, or 242), at least in sections, are provided with claw-like projections (56, 58), which suitably encompass the mutually opposed outer edge strips (36) of the support element (12).

9. The wiper blade according to claim 8, wherein a glued attachment is produced in the vicinity of the claw-like projections (56, 58).

10. The wiper blade according to claim 1, wherein the attack surface (54) of the wind deflection strip (42, 142, or 242) is embodied as a flute on the outer wall of the one leg (44).

11. The wiper blade according to claim 1, wherein a hardness of the material for the wind deflection strip (42) is at most 40 percent greater than the hardness of the material for the wiper strip (14).

12. The wiper blade according to claim 1, wherein a hardness of the material for the wind deflection strip (42, 142, or 242) is at most 20 percent greater than the hardness of the material for the wiper strip (14).

13. A wiper blade for cleaning windows, comprising:

a band-like, elongated, spring-elastic support element (12), wherein a lower band surface (13) oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), which can be placed against the window, disposed on it so that the longitudinal axes of these two parts are parallel and wherein an upper band surface (11) of the support element has a wind deflection strip (42) disposed on it, wherein the wind deflection strip extends in a longitudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, wherein the two diverging legs are connected to each other at a common base (48) and wherein free ends of the two diverging legs oriented toward the window (22) are supported on the support element, and the attack surface (54) is embodied on the outside of the one leg (44), wherein the upper band surface (11) of the support element (12), in its middle section, includes a wiper blade part (15) for connecting the wiper blade (10) to a reciprocally driven wiper arm (16) and is supported, wherein an end cap (38) is respectively disposed at both ends of the support element (12), and wherein a section (40) of the wind deflection strip (42) is disposed between and in contact with each respective end cap (38) and the device piece (15).

14. A wiper blade for cleaning windows, comprising:

a band-like, elongated, spring-elastic support element (12), whose lower band surface (13) oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), which can be placed against the window, disposed on it so that the longitudinal axes of these two parts are parallel and whose upper band surface (11) has a wind deflection strip (42) disposed on it, which extends in the longitudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, which are connected to each other at a common base (48) and whose free ends oriented toward the window (22) are supported on the support element, and the attack surface (54) is embodied on the outside of the one leg (44), wherein the two legs (44, 46) of the wind deflection strip (142 or 242) are connected to each other by means of a wall (144 or 244) in the vicinity of the two wiper blade ends, and wherein the wall (144 or 244) is provided with a recess (146 or 246) that is open at the edge oriented toward the window (22), wherein the width (148) of this recess is greater than the width (150) of the wiper strip (14) in a vicinity of the support element and its depth (152) reaches to the upper band surface (11) of the support element (12).

15. A wiper blade for cleaning windows, comprising

a band-like, elongated, spring-elastic support element (12), whose lower band surface (13) oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), which can be placed against the window, disposed on it so that the longitudinal axes of these two parts are parallel and whose upper band surface (11) has a wind deflection strip (42) disposed on it, which extends in the longitudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, which are connected to each other at a common base (48) and whose free ends oriented toward the window (22) are supported on the wiper blade (10), and the attack surface (54) is embodied on the outside of the one leg (44), wherein

the free leg ends (50, 52) of the wind deflection strip (42, 142, or 242), at least in sections, are provided with claw-like projections (56, 58), which suitably encompass the mutually opposed outer edge strips (36) of the support element (12), and wherein the claw-like projections extend from the leg ends (50, 52) into a vicinity of a wall (154 or 254), and suitably encompass end regions (112) of the support element (12).

16. A wiper blade for cleaning windows, comprising:

a band-like, elongated, spring-elastic support element (12), whose lower band surface (13) oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), which can be placed against the window, disposed on it so that the longitudinal axes of these two parts are parallel and whose upper band surface (11) has a wind deflection strip (42) disposed on it, which extends in the longitudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, which are connected to each other at a common base (48) and whose free ends oriented toward the window (22) are supported on the support element, and the attack surface (54) is embodied on the outside of the one leg (44), wherein the free leg ends (50, 52) of the wind deflection strip (42, 142, or 242), at least in sections, are provided with claw-like projections (56, 58), which suitably encompass the mutually opposed outer edge strips (36) of the support element (12), and wherein the claw surfaces (60) resting against the upper band surface (11) of the support element (12) have a greater width (62) than the claw surfaces (64) engaging the lower band side (13).

17. A wiper blade for cleaning windows, comprising:

a band-like, elongated, spring-elastic support element (12), whose lower band surface (13) oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), which can be placed against the window, disposed on it so that the longitudinal axes of these two parts are parallel and whose upper band surface (11) has a wind deflection strip (42) disposed on it, which extends in the longitudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, which are connected to each other at a common base (48) and whose free ends oriented toward the window (22) are supported on the support element, and the attack surface (54) is embodied on the outside of the one leg (44), wherein the upper band surface (11) of the support element (12), in its middle section, the wiper blade part (15) of a device, which is for connecting the wiper blade (10) to a reciprocally driven wiper arm (16), is supported, wherein an end cap (38) is respectively disposed at both ends of the support element (12), wherein a section (40) of the wind deflection strip (42) is disposed between each respective end cap (38) and the device piece (15), and wherein the end caps (38) are provided with a flute (68), which extends in a projection of the flute of the attack surface (54) of the wind deflection strip.

18. A wiper blade for cleaning windows, comprising:

a band-like, elongated, spring-elastic support element (12), whose lower band surface (13) oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), which can be placed against the window, disposed on it so that the longitudinal axes of these two parts are parallel and whose upper band surface (11) has a wind deflection strip (42) disposed on it, which extends in the longitudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, which are connected to each other at a common base (48) and whose free ends oriented toward the window (22) are supported on the support element, and the attack surface (54) is embodied on the outside of the one leg (44), wherein the upper band surface (11) of the support element (12), in its middle section, the wiper blade part (15) of a device, which is for connecting the wiper blade (10) to a reciprocally driven wiper arm (16), is supported, wherein an end cap (38) is respectively disposed at both ends of the support element (12), and wherein a section (40) of the wind deflection strip (42) is disposed between each respective end cap (38) and the device piece (15), and the wiper blade part (15) of the connecting device is provided with a flute (70), which extends in a projection of the flute of the attack surface (54) of the wind deflection strip (42).

19. A wiper blade for cleaning windows, comprising:

a band-like, elongated, spring-elastic support element (12), whose lower band surface (13) oriented toward the window (22) has an elongated, rubber-elastic wiper strip (14), which can be placed against the window, disposed on it so that the longitudinal axes of these two parts are parallel and whose upper band surface (11) has a wind deflection strip (42) disposed on it, which extends in the longitudinal direction of the support element (12), is provided with an attack surface (54) oriented toward the main flow of the relative wind, and is made of an elastic material, wherein the wind deflection strip (42, 142, 242) has two diverging legs (44, 46), viewed in transverse cross section, which are connected to each other at a common base (48) and whose free ends oriented toward the window (22) are supported on the support element, and the attack surface (54) is embodied on the outside of the one leg (44), and wherein the wiper strip (14) has a Shore hardness A of between 64 and 71, in particular 68, and the wind deflection strip (42) has a Shore hardness A greater than the wiper strip and is of between 70 and 78, in particular 72.

* * * * *

EXHIBIT B

US006978512B2

(12) **United States Patent**
Dietrich et al.

(10) **Patent No.: US 6,978,512 B2**
(45) **Date of Patent: *Dec. 27, 2005**

(54) **WIPER BLADE FOR CLEANING VEHICLE WINDOWS**

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(73) Assignee: **Robert Bosch GmbH**, Stuttgart (DE)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 173 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/031,828**

(22) PCT Filed: **Apr. 4, 2001**

(86) PCT No.: **PCT/DE01/01303**

§ 371 (c)(1),
(2), (4) Date: **May 8, 2002**

(87) PCT Pub. No.: **WO01/89891**

PCT Pub. Date: **Nov. 29, 2001**

(65) **Prior Publication Data**

US 2002/0148064 A1 Oct. 17, 2002

(30) **Foreign Application Priority Data**

May 25, 2000 (DE) 100 25 706

(51) **Int. Cl.**[7] **B60S 1/38**
(52) **U.S. Cl.** **15/250.43**; 15/250.451; 15/250.452; 15/250.48
(58) **Field of Search** 15/250.43, 250.44, 15/250.451, 250.48, 250.452, 250.453, 250.454

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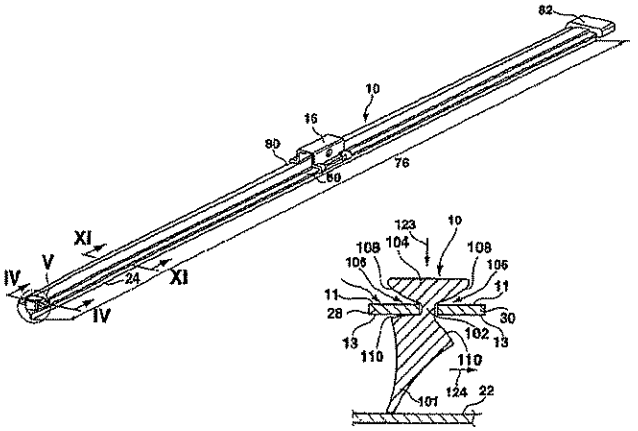
Primary Examiner—Gary K. Graham
(74) *Attorney, Agent, or Firm*—Michael J. Striker

(57) **ABSTRACT**

A wiper blade is proposed, which is for cleaning for windows, particularly of motor vehicles. The wiper blade **(10)** has an elongated, rubber-elastic wiper strip **(14)**, which can be placed against the window **(22)** and is connected to an elongated, spring-elastic support element **(12)** so that their longitudinal axes are parallel, which support element **(12)** is directly connected to a device **(16)** for connecting the wiper blade to a driven wiper arm **(18)**. The support element **(12)** has two band-like spring strips **(28, 30)**, which are situated in a plane that is disposed in front of the window, essentially parallel to the window, and whose one, lower band surfaces **(13)** are oriented toward the window and whose adjacent, inner longitudinal edges **(48)**, which are disposed spaced a distance **(34)** apart from each other, each protrude into a respective longitudinal groove **(54, 56, or 106)**, which grooves are associated with each longitudinal edge and are open toward a respective longitudinal side of the wiper strip **(14)**, and these two spring strips **(36, 38)** are connected to each other by at least two crosspieces **(36, 38)** disposed spaced apart from each other in the longitudinal direction. Manufacturing advantages for the wiper blade according to the invention are achieved if each crosspiece **(36, 38)** has a middle section **(42)** which extends spaced a distance **(44)** apart from the upper band surfaces **(11)** of the spring strips **(28, 30)**, producing bridge-like crosspieces, where the distance **(34)** between the two longitudinal strips **(28, 30)** is less than the bridge width **(46)**.

15 Claims, 4 Drawing Sheets



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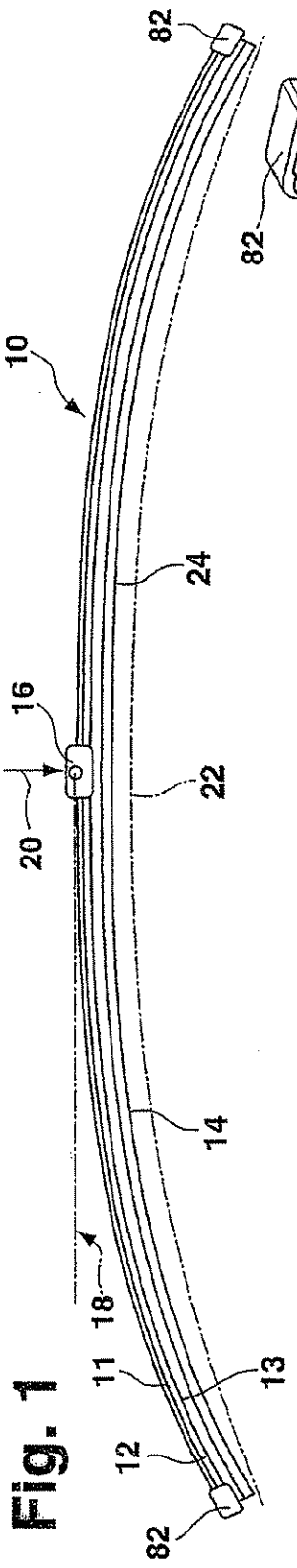

Fig. 1

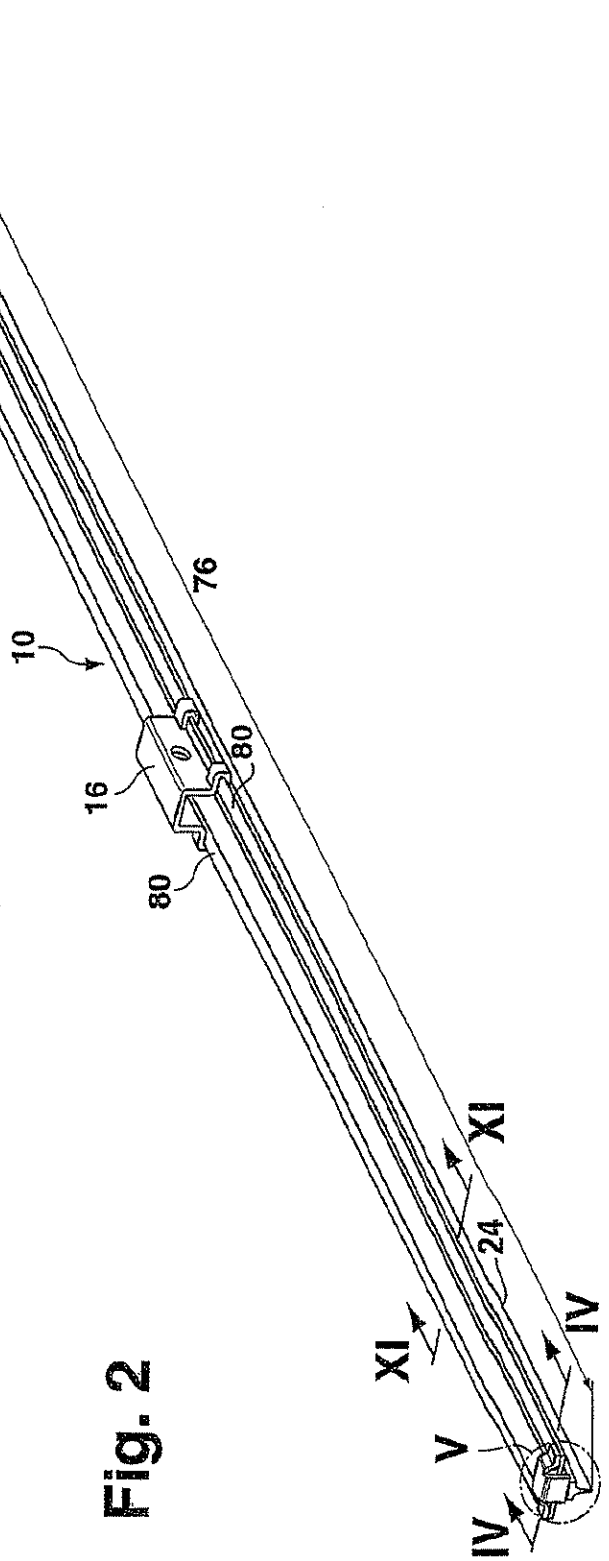

Fig. 2

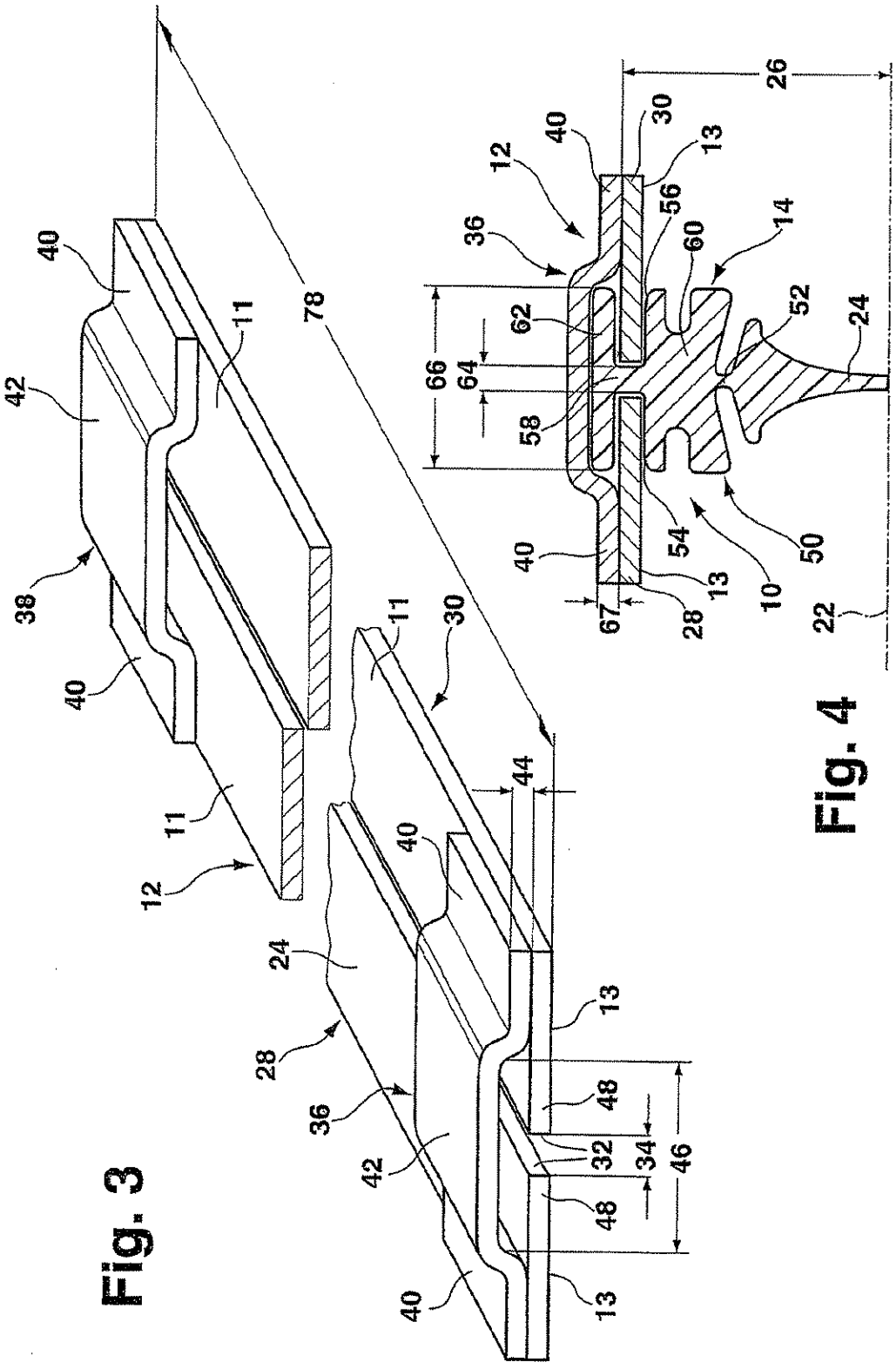
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Fig. 3

Fig. 4

Fig. 5

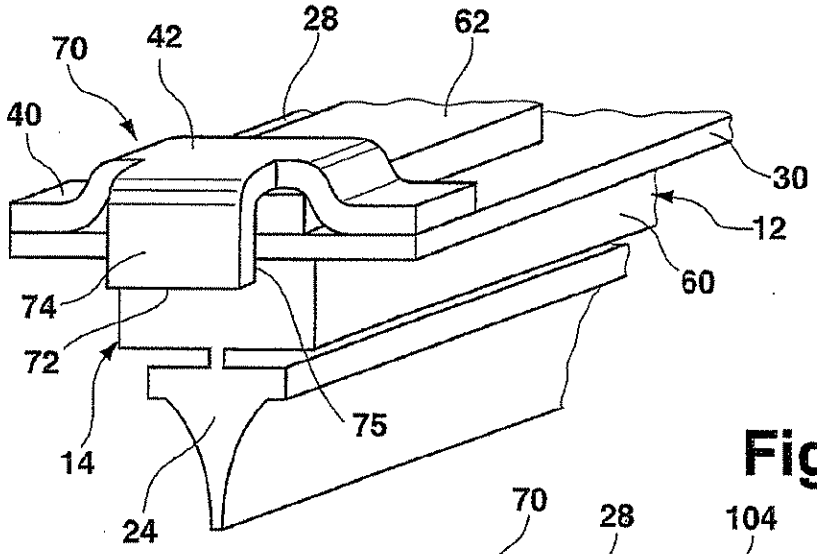


Fig. 7

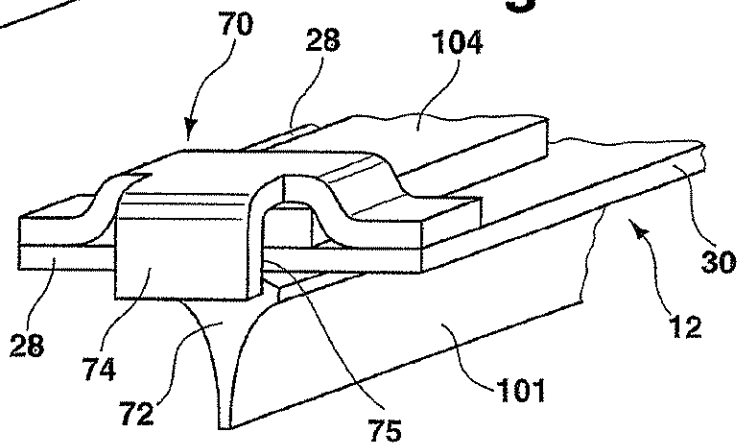


Fig. 6

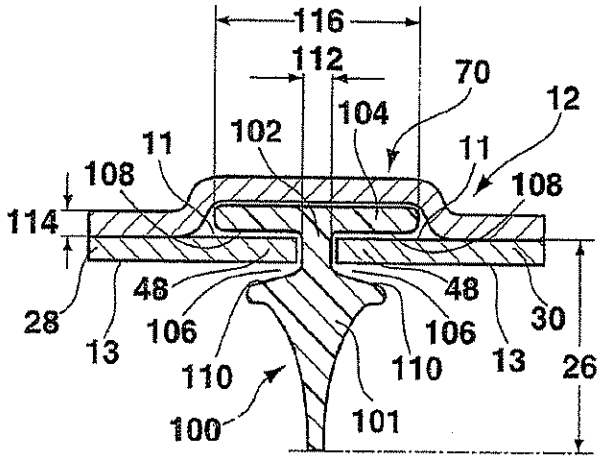


Fig. 8

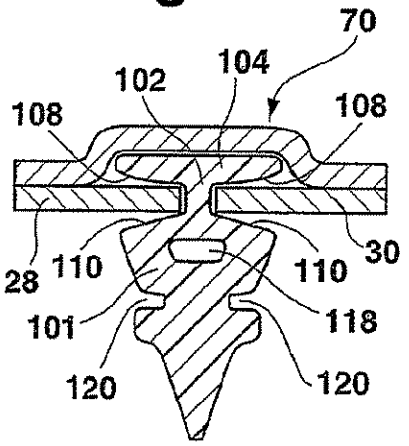


Fig. 9

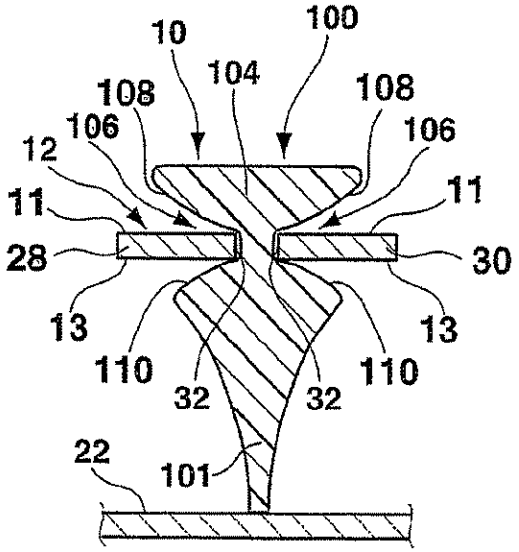


Fig. 10

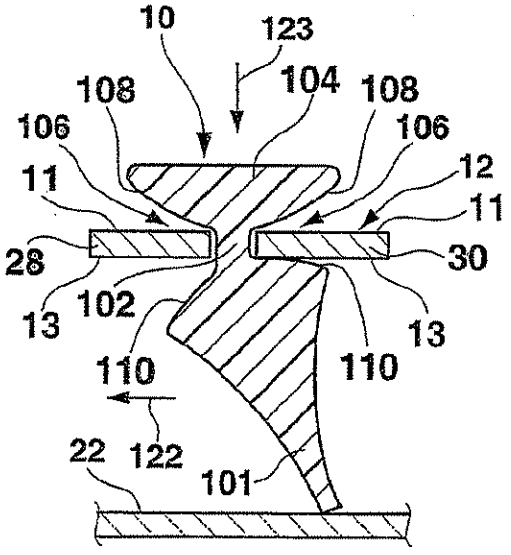
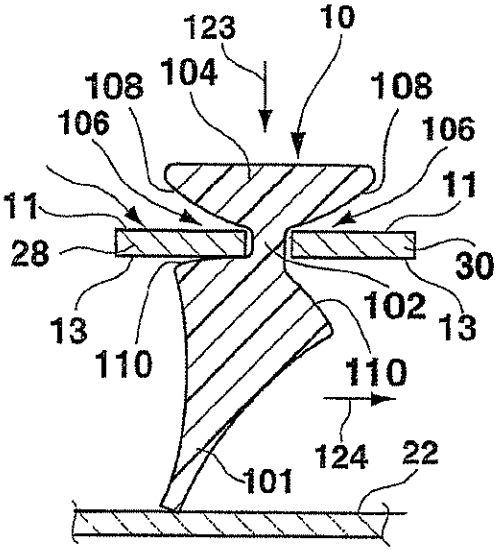


Fig. 11



WIPER BLADE FOR CLEANING VEHICLE WINDOWS

BACKGROUND OF THE INVENTION

In common wiper blades for motor vehicles, the purpose of the support element is to assure as uniform as possible a distribution of the wiper blade pressure against the window, which pressure is exerted by a wiper arm connected to the wiper blade, over the entire wiping field wiped by the wiper blade. Through an appropriate curvature of the unloaded support element—i.e. when the wiper blade is not resting against the window—the ends of the wiper strip, which is placed completely against the window during the wiping operation of the wiper blade, are loaded toward the window by the support element, which is under tension in this state, even though the curvature radii of spherically curved vehicle windows change with each wiper blade position. The curvature of the wiper blade must therefore be somewhat sharper than the sharpest curvature measured within the wiping field on the window to be wiped. The support element consequently replaces the complex support bracket structure with two spring strips disposed in the wiper strip, as is the practice in conventional wiper blades (DE-OS 15 05 357).

In a known wiper blade (German Utility Model 29611722.6), the two spring strips are of one piece and are connected by means of crosspieces disposed at both of their ends. Since these crosspieces are disposed in the plane of the spring strips, the slot, which is disposed between the opposing longitudinal edges and is enclosed by the spring strips and the crosspieces, must open outward in its one end section so that is possible to property install the wiper strip in the slot. This installation opening, though, can produce disadvantageous changes in the spring properties of the support element with regard to the desired wiping results. In addition, manually inserting the wiper strip into the slot through this opening is cost-intensive.

SUMMARY OF THE INVENTION

In the wiper blade according to the invention, with the characterizing features of claim **1**, it is possible, starting from one end of the support element, to insert the wiper strip in a rectilinear fashion between the two opposing longitudinal edges of the spring strip, where their inner, free edge strips protrude into the longitudinal grooves of the wiper strip. This simple installation movement can be easily executed by an automated installation machine, which achieves a considerable cost reduction. In addition, the disadvantageous installation opening of the slot can be eliminated because the bridge-like crosspieces permit the rectilinear installation motion of the wiper strip from one end of the support element.

Embodying the crosspieces as separate components that are attached to the spring strips achieves advantages in the production of the wiper blade.

For the connection between the spring strips and the crosspieces, it is useful if the crosspieces are attached to the upper band surfaces of the two spring strips.

A stable, durable connection between the spring strips and the crosspieces is achieved by welding together these separate components.

In order for the wiper blade or its wiper strip to be able to adapt in a trouble-free manner to the respective window curvature during wiper operation, it has turned out to be advantageous if the length of the spring strips is greater than the length of the wiper strip because then, through appropriate embodiments, a certain, advantageous longitudinal mobility of the wiper strip in relation to the support element can be assured.

A stable, low-torsion support element is produced if at least one crosspiece is disposed at each end section of the two associated spring strips. Depending on the length of the wiper blade, however, it is also quite conceivable to connect the two spring strips to each other by means of additional bridge-like crosspieces. In short wiper blades, it has turn out that placing a single crosspiece at each end section of the support element is sufficient to achieve a stable, torsion-free wiper blade.

An additional stabilization of the support element is achieved if a crosspiece disposed in the central region of the two associated spring strips is embodied as part of a connecting device for connecting the wiper blade to the wiper arm.

In a modification of the invention, at least one of the two crosspieces, which is respectively disposed at one of the end sections of the spring strips, has a stop, which is connected to its middle section and partially covers the end of the wiper strip adjacent to it. This prevents the wiper strip from creeping out of the support element in the longitudinal direction of the wiper blade.

When a crosspiece, which is provided with a stop, is respectively disposed at each of the two ends of the support element, the distance between the two stops is greater than the length of the wiper strip in order to assure a favorable adaptation of the wiper strip to the respective window curvature.

In order to reduce the danger of injury when manipulating the wiper, each crosspiece disposed at the end sections of the two spring strips is provided with a covering cap that is preferably made of plastic.

Other advantages during the wiping operation of the wiper according to the invention ensue from the fact that the thickness of a wall or intermediary strip between the two longitudinal grooves in the wiper strip is less than the distance between the adjacent longitudinal edges of the two associated spring strips. The longitudinal play of the wiper strip in the support element consequently produces a "free-floating", tension-free wiper strip that can continuously adapt to the window profile during wiper operation without being impaired by a clamped connection.

A particularly advantageous modification of the wiper blade is achieved if a wiper strip, which has a uniform cross section over its longitudinal span, has a strip-like wiper lip, which can be placed against the window and which, by means of a narrow intermediary strip that is formed by groove-like constrictions on opposite sides, is connected to a covering strip secured to the support element, and each of the two adjacent, inner longitudinal edges of the spring strips is disposed in one of the two groove-like constrictions of the wiper strip. This reduces the height of the wiper blade considerably. Because the width of the constriction groove is greater than the thickness of the spring strips in a partial region, the wiper lip can always tilt into the required drag position during wiper operation.

In this connection, it is particularly advantageous if the lateral defining surfaces of the groove-like constrictions diverge from the intermediary strip to the longitudinal sides of the wiper strip. With a corresponding matching, the spring strips can thus guide the wiper strip at the intermediary strip and simultaneously allow the wiper lip to execute its required tilting motion into the drag position.

One modification of the invention provides that one of the lateral defining surfaces of the groove-like constrictions has a spherical curvature, viewed in cross section. This permits a favorable and quiet rolling motion of this side wall against the band surface of the relevant spring strip oriented toward it.

This advantage can be further improved if both lateral defining surfaces of the groove-like constrictions have a spherical curvature, viewed in cross section.

According to one embodiment of the invention, the wiper lip has a completely enclosed longitudinal conduit in order to encourage an optimal contact of the wiper strip against the preferably spherically curved window to be wiped.

So that it is no longer necessary to carry out particular steps to fasten a connecting device for a wiper arm that moves the wiper blade, each of the two spring strips, at least with a central edge strip, protrudes from its groove-like constriction so that the connecting device can be fastened to the free edge strips.

Other advantageous modifications and embodiments of the invention are disclosed in the following description of exemplary embodiments shown in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side view of a wiper blade according to the invention,

FIG. **2** is a prolate depiction of the wiper blade from FIG. **1**, in a perspective representation drawn to scale,

FIG. **3** shows a foreshortened, enlarged, prolate, perspective depiction of a support element associated with the wiper blade according to the invention,

FIG. **4** shows an enlargement of the sectional plane of a section along the line IV—IV in FIG. **2**,

FIG. **5** shows an enlargement of a detail labeled V in FIG. **2**,

FIG. **6** shows the sectional plane of a section according to FIG. **4** through another embodiment of the wiper blade according to the invention,

FIG. **7** shows the wiper blade from FIG. **6** in a detail that corresponds to FIG. **5**,

FIG. **8** shows the sectional plane of a section according to FIGS. **4** and **6** through another embodiment of the wiper blade according to the invention,

FIG. **9** is a schematic representation of the sectional plane of a section along the line IX—IX in FIG. **2** through a wiper blade according to the invention, in an enlarged depiction, in which the wiper blade is placed against the window surface to be wiped,

FIG. **10** shows the wiper blade from FIG. **9** during wiper operation in one wiping direction, and

FIG. **11** shows the wiper blade from FIG. **9** during wiper operation in the other wiping direction.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A wiper blade **10** indicated in FIGS. **1** and **2** has a band-like, elongated, spring-elastic support element **12**, against whose underside **13** an elongated, rubber-elastic wiper strip **14** is disposed so that their longitudinal axes are parallel. On the top side **11** of the support element **14**, which is also referred to as a spring bar, the center section of the support element is provided with the wiper blade part **16** of a connecting device, with the aid of which the wiper blade **10** can be detachably connected in an articulating fashion to a driven wiper arm **18** indicated with a dot-and-dash line in FIG. **1**. To that end, the free end of the wiper arm **18** is provided with the wiper arm part of the connecting device. The wiper arm **18** is loaded in the direction of the arrow **20** toward the window to be wiped, for example the windshield of a motor vehicle, whose surface to be wiped is indicated with a dot-and-dash line **22** in FIG. **1**. Since the line **22** is intended to represent the sharpest curvature of the window surface, it is clear that the curvature of the wiper blade **10**, which is not yet under tension and rests with both of its ends against the window, is sharper than the maximal window curvature (FIG. **1**). Due to the pressure (arrow **20**), the wiper blade **10** places its wiper lip **24** over its entire length against the window surface **22**. This causes a tension to be built up in the spring-elastic support element **12**, which is made of metal for example, which tension assures a uniform contact of the wiper strip **14** and the wiper lip **24** over its entire length against the window and assures a uniform distribution of the pressure.

A first embodiment of the wiper blade **10** will be explained in detail below in conjunction with FIGS. **3** to **5**. FIG. **4** shows that the support element **12** of the wiper blade **10** is spaced a distance **26** apart from the window **22** to be wiped. Its position is designed so that its band surfaces **11** and **13** are disposed in a plane extending essentially parallel to the window surface **22** to be wiped. The particularly advantageous design of the support element **12** is shown particularly in FIGS. **3** and **4**. It has two band-like spring strips **28** and **30** disposed in a common plane, which are aligned parallel to each other. The opposing, inner longitudinal edges **32** are spaced a distance **34** apart from each other. The spring strips **28**, **30** are connected to each other at each of the two ends by means of a bridge-like crosspiece **36** and **38**, for example by means of welds. In this instance, each bridge-like crosspiece rests with its end sections **40** against the top side **11** of the support element **12** or its spring strips **28**, **30**. Each of the two crosspieces **36** and **28** has a middle section **42** which is spaced a distance **44** apart from the upper band surface **11** of the spring strips, thereby forming the basis of its bridge-like design. Since the longitudinal span **46** of the middle sections **42** is greater than the distance **34** between the opposing inner longitudinal edges **32**, the two spring strips **28** and **30** extend with inner edge strips **48** into the region of the middle sections **42**, where the edge strips **48** are disposed underneath the middle sections **42**, spaced apart from them by a distance **44**. In addition to the above-mentioned purposes of the support element **12** with regard to contact force distribution, it should also assure a regulation-compliant, tension-free guidance of the wiper strip **14** during wiper operation. This also assures a quiet wiper operation.

The wiper strip **14** of this first embodiment has a cross section, which will be clarified in conjunction with FIG. **4**. It has a top strip **50** that is connected to the wiper lip **24**, which performs the actual wiping function, by means of a narrow intermediary strip **52**. The disposition of the intermediary strip **52** permits the wiper lip **24** to tilt into a drag position that encourages the wiping function, which will be explained later. On its opposite longitudinal sides, the top strip **50** is provided with longitudinal grooves **54** and **56** that are open at the edges oriented toward these longitudinal sides. The longitudinal grooves **54** and **56** serve to receive the inner edge strips **48** of the spring strips **28** and **30**. The depth of the longitudinal grooves **54** and **56** is selected so that a wall **58** remains between the two longitudinal grooves. The top strip **50** consequently has a main strip **60** and a covering strip **62**, which are connected to each other by

means of the wall **58**. The thickness **64** of the wall **58** is less than the distance **34** between the inner longitudinal edges **32** of the spring strips **28, 30**, i.e. less than the distance between their inner edge strips **48**. The width of the two longitudinal grooves **54** and **56** in the top strip **50** is matched to the thickness of the spring strips **28, 30** and/or their inner edge strips **48** so that a tension-free securing of the wiper strip to the support element **12** is assured when the wiper strip according to FIG. **4** is put together with the support element **12** according to FIG. **3**. Since the width **66** of the covering strip **62** is also somewhat less than the longitudinal span **46** of the middle section **42**, also referred to as the bridge width, and its thickness **67** is less than the distance **44** between the middle section **42** and the top sides **11** of the spring strips **28, 30**, the wiper strip **14**, which has a uniform cross section over its entire longitudinal span, can easily be inserted longitudinally into the support element **12** and thus connected to it.

FIG. **5** shows another exceptional feature of the wiper blade according to the invention. This figure shows that on its side oriented toward the wiper blade end, in its middle section, the crosspiece **70** disposed at one end of the support element is provided with a stop **74**, which is connected to it and which at least partially covers the end face **72** adjacent to it. The stop **74** is constituted by a tab-like projection from the middle section **42**, which projection is bent at right angles. If each of the two wiper blade ends or each of the two support element ends is provided with a crosspiece **70** according to FIG. **5**, care must be taken that the distance between the opposing inner walls **75** of the stop tabs **74** is slightly greater than the length **76** of the wiper strip **14** (FIG. **2**). This can also be achieved, for example, by the length **78** of the support element **12** being slightly greater than the length **76** of the wiper strip **14**. The placement of the stops **74** at both ends thus constitutes an effective securing means for preventing the wiper strip **14** from creeping in the longitudinal direction out of its support element **12** during wiper operation. Naturally, in such a case, at least one of the two stop tabs **74** is bent at right angles only after the wiper strip **14** is inserted into the support element **12**.

The wiper arm part **16** of the connecting device, which is for the wiper arm and is disposed in the middle section of the wiper blade **10**, engages around the outer edge strips **80** of the spring strips **28, 30** or the support element **12** protruding from the longitudinal grooves **54** and **56**. The connection between the part **16** and the support element **12** can be produced by means of positive and/or frictional engagement. With a corresponding length of the wiper blade, it can also be useful to provide additional corresponding crosspieces between the two crosspieces **36** and **38** disposed at the ends. In order to prevent injury when the wiper blade is being manipulated, particularly by the end user, a covering cap **82** that is preferably made of plastic is disposed on the two spring strips **28, 30** or the crosspieces **36, 38** at the end, preferably connected to them in detent fashion, preferably connected to them in detent fashion (FIGS. **1** and **2**).

FIGS. **6** to **8** show additional embodiments of the wiper blade according to the invention.

The support elements of these embodiments fully correspond to the support elements **12** from FIGS. **3** to **5** explained above so that the reference numerals used for them in these figures can be adopted directly. The embodiment of the wiper strip **100** in this embodiment, though, differs fundamentally from the design of the wiper strip **14** in the embodiment described above. As FIG. **6** in particular shows, the wiper strip **100** has only one wiper lip **101**, which is of one piece with a covering strip **104** and is connected to it by means of an intermediary strip **102**. The main strip **60** in the exemplary embodiment described above in conjunction with FIGS. **4** and **5** is consequently eliminated. The inner edge strips **48** of the spring strips **28** and **30** rest in groove-like constrictions **106** of the wiper strip **100**, which are required to produce the narrow intermediary strip **102**. Consequently, the lateral defining surface **108** of the constriction **106** embodied on the covering strip **104** is oriented toward the upper band surface **11** of the support element **12**. The other lateral defining surface **110** of the groove-like constriction **106** is consequently disposed directly opposite from the lower band surface **13** of the support element **12**. It is consequently clear that each of the two inner longitudinal edges **32** of the two spring strips **28, 30** or of the support element **12** is disposed in one of the two groove-like constrictions **106** of the wiper strip **100**. In addition, FIG. **6** particularly shows that the two lateral defining surfaces **110** of the constrictions **106** are embodied spherically and are disposed so that the width dimension of the groove-like constrictions **106** is wider than the thickness of the spring strips **28, 30**, at least over an outer partial region. It is therefore possible for the wiper lip **101** to tilt over into the desired, advantageous drag position during wiper operation. In this embodiment of the wiper blade according to the invention as well, the width **112** of the intermediary strip **102** is matched to the distance **34** between the opposing inner longitudinal edges **32** of the spring strips **28, 30** in such a way that an air gap remains between the intermediary strip and the spring strips. Here, too, the thickness **114** of the covering strip **104** is also slightly less than the distance **44** between the middle section **42** of the crosspiece **36** and the inner edge strip **48**. Also, the width **116** of the covering strip **104** is slightly less than the longitudinal span **46** of the middle section **42** of the bridge-like crosspieces **36**. As a result, it is possible to insert the wiper strip **100**, which has a uniform cross section over its entire length, without trouble into the support element **12** over its longitudinal span so that the installation position shown in FIG. **6** is achieved. In this embodiment as well, the plane in which the support element **12** extends is spaced a distance **26** apart from the surface **22** of the window **22** to be wiped.

As described above in conjunction with FIG. **5**, in this embodiment of the wiper blade according to the invention as well, each of the two bridge-like crosspieces **70**, at its outer ends in the longitudinal span of the wiper blade, can be provided with a stop **74**, which is bent at right angles so that after the wiper strip **14** is inserted into the support element **12** and the stop tabs **74** are bent at right angles, the wiper strip **100** is reliably assured of being longitudinally secured in the support element **12**. It is clear that in this embodiment as well, the distance between the opposing inner walls **75** of the stop tabs **74** must be slightly greater than the length **76** of the wiper strip.

Another embodiment of the wiper blade according to the invention will be explained in conjunction with FIG. **8**. The embodiment according to FIG. **8** corresponds in its basic design to the design of the embodiment described in conjunction with FIG. **6**. In contrast to the embodiment according to FIG. **6**, though, in this embodiment, not only the lateral defining surfaces **110** of the groove-like constrictions **106**, but also the other lateral defining surfaces **108** embodied on the covering strip **104** are embodied spherically. The embodiment according to FIG. **8** also differs from the embodiment according to FIG. **6** by means of a continuous, completely closed longitudinal conduit **118** disposed in the wiper lip **101**. The disposition of the longitudinal conduit **118** in the wiper lip can be used, by itself or in connection

with additional longitudinal grooves, to produce a smooth, quiet tilting behavior of the wiper lip during wiper operation. In addition, its disposition is not absolutely required in connection with the spherical embodiment of the defining surfaces **108, 110**.

As is clear from FIGS. **2** and **3**, the width of the support element **12** is the same over its entire longitudinal span. However, it is also conceivable for the support element to taper toward the end sections of the wiper blade. In order for the part **16** to be fastened to the wiper blade, it is sufficient if each spring strip **28, 30**, at least with a central, outer edge strip **80**, protrudes from its groove-like constriction so that the part **16** of the connecting device can be fastened to this edge strip **80**. Instead of a support element **12** according to FIG. **3**, it is also conceivable for the two spring strips to be embodied as separate components and to be disposed in the groove-like constrictions of the wiper strip. The securing, in particular of the distance **34**, can then be performed by other components that are not shown in detail.

FIGS. **9** to **11** show schematic sectional depictions of the wiper blade according to FIGS. **6** and **7**, cut along the line IX—IX in FIG. **2**; in FIG. **9**, the wiper blade **10** is merely placed with its wiper lip **101** against the window surface **22** to be wiped and FIG. **9** shows the circular curved surfaces **108, 110** of the groove-like constrictions in cross-section. The wiper strip **100** is secured with play between the inner longitudinal edges **32** of the two spring strips **28, 30** (also see FIGS. **3** and **4**). Since the length **76** of the wiper strip **100** is also slightly less than the length **78** of the support element **12** or is slightly less than the distance between the opposing inner walls **75** of the stops **74** at the two ends of the support element **12**, this produces a so-called "free-floating", tension-free, but operationally reliable securing of the wiper strip **100** in the support element **12**.

If during wiper operation, the wiper blade **10**, loaded by the pressure (arrow **20** in FIG. **1**), is then moved across the window **22** in the direction of the arrow **122** in FIG. **10**, then the wiper lip **101** tilts in the vicinity of the intermediary strip **102** into an advantageous drag position in which the support element **12** comes slightly closer to the window (arrow **123**). The tilting motion is limited by the fact that the lateral defining surface **110** of the one groove-like constriction **106** is supported against the underside **13** of the one spring strip **30**. When the wiper blade **10** has reached its reversal position and is moved by the wiper arm **18** in the opposite direction (arrow **124** in FIG. **11**), the wiper lip **101** tilts through an intermediary position shown in FIG. **9**, into its other drag position (FIG. **11**), in which the wiper lip **101** is supported with the lateral defining surface **110** of the other groove-like constriction **106** against the underside **13** of the other spring strip **28**.

When the drag positions of the wiper lip **101**, close to their reversal positions—due to the usually spherical curvature of the windshield **22**—approaches the window, the spherically embodied defining surfaces **110** roll silently against the undersides **13** of the spring strips **28, 30**. Correspondingly, the other spherical defining surfaces **108** of the groove-like constrictions **106** can, if necessary, also roll against the top sides **11** of the spring strips **28** and **30**.

What is claimed is:

1. A wiper blade **(10)** for windows of motor vehicles, having an elongated, rubber-elastic wiper strip **(14)**, which can be placed against the window **(22)** and is connected to an elongated, spring-elastic support element **(12)** so that their longitudinal axes are parallel, which support element **(12)** is directly connected to a device for connecting the wiper blade to a driven wiper arm **(18)**, wherein the support element **(12)** has two band-like spring strips **(28, 30)**, which are situated in a plane that is disposed in front of the window, essentially parallel to the window, and whose, lower band surfaces **(13)** are oriented toward the window and whose adjacent, inner longitudinal edges **(48)**, which are disposed spaced a distance **(34)** apart from each other, each protrude into a respective longitudinal groove **(54, 56, or 106)**, which grooves are associated with each longitudinal edge and are each open toward a respective longitudinal side of the wiper strip **(14)**, and these two spring strips **(36, 38)** are connected to each other by at least two crosspieces **(36, 38)** disposed spaced apart from each other in the longitudinal direction, wherein each crosspiece **(36, 38)** has a middle section **(42)** which extends spaced a distance **(44)** apart from the upper band surfaces **(11)** of the spring strips **(28, 30)**, producing bridge-like crosspieces **(36, 38)** defining a bridgewidth, where the distance **(34)** between the two longitudinal strips **(28, 30)** is less than the bridge width **(46)**,

wherein the crosspieces **(36, 38)** are attached to the upper band surfaces **(11)** of the two spring strips **(28, 30)**,

wherein the crosspieces **(36, 38)** are welded to the two spring strips **(28, 30)**, so that the wiper strip from an end of the support element is insertable linearly between the longitudinal edges of the spring strips facing one another, and

wherein each crosspiece **(36, 38)** disposed at the end sections of the two spring strips **(28, 30)** is provided with a covering cap **(82)** preferably made of plastic.

2. The wiper blade according to claim **1**, wherein the crosspieces **(36, 38)** are embodied as separate components and are affixed to the two spring strips **(28, 30)**.

3. The wiper blade according to claim **1**, wherein the length **(78)** of the spring strips is greater than the length **(76)** of the wiper strip **(14)**.

4. The wiper blade according to claim **1**, wherein at least one crosspiece **(36, 38)** is disposed at each end section of the two associated spring strips **(28, 30)**.

5. The wiper blade according to claim **4**, wherein a crosspiece disposed in the middle region of the two associated spring strips **(28, 30)** is embodied as part **(16)** of the connecting device for connecting the wiper blade **(10)** to the wiper arm **(18)**.

6. The wiper blade according to claim **4**, wherein at least one of the two crosspieces **(70)** disposed at one of the respective end sections of the spring strips **(28, 30)** is provided with a stop **(74)**, which is connected to its middle section **(42)** and partially covers the adjacent end **(72)** of the wiper strip.

7. The wiper blade according to claim **6**, wherein the both of the crosspieces **(36, 38)** disposed at the ends of the support element **(12)** are provided with a stop **(74)**.

8. The wiper blade according to claim **1**, wherein the thickness **(64)** of a wall **(58)** provided between the two longitudinal grooves **(54, 56)** in the wiper strip **(14)** is smaller than the distance **(34)** between the adjacent longitudinal edges **(32)** of the two associated spring strips **(28, 30)**.

9. The wiper blade according to claim **1**, wherein the wiper strip **(100)**, which has a uniform cross section over its longitudinal span, has a strip-like wiper lip **(101)**, which can be placed against the window and which, by means of a narrow intermediary strip **(102)** that is formed by groove-like constrictions **(106)** on opposite sides, is connected to a covering strip **(104)** secured to the support element **(12)**, and in that each of the two adjacent inner longitudinal edges **(32)** of the spring strips **(28, 30)** is disposed in one of the two groove-like constrictions **(106)** of the wiper strip **(100)**.

10. The wiper blade according to claim 9, wherein the lateral defining surfaces (108, 110) of the groove-like constrictions (106) diverge from the intermediary strip (102) to the longitudinal sides of the wiper strip.

11. The wiper blade according to claim 10, wherein one lateral defining surface (110) of the groove-like constrictions (106) has a circular curvature, viewed in cross section.

12. The wiper blade according to claim 9, wherein the wiper lip (101) is provided with a completely closed longitudinal conduit (118).

13. The wiper blade according to claim 9, wherein each spring strip (28, 30), at least with a central edge strip, protrudes from its groove-like constriction (106).

14. A wiper blade (10) for windows of motor vehicles, having an elongated, rubber-elastic wiper strip (14), which can be placed against the window (22) and is connected to an elongated, spring-elastic support element (12) so that their longitudinal axes are parallel, which support element (12) is directly connected to a device for connecting the wiper blade to a driven wiper arm (18), wherein the support element (12) has two band-like spring strips (28, 30), which are situated in a plane that is disposed in front of the window, essentially parallel to the window, and whose, lower band surfaces (13) are oriented toward the window and whose adjacent, inner longitudinal edges (48), which are disposed spaced a distance (34) apart from each other, each protrude into a respective longitudinal groove (54, 56, or 106), which grooves are associated with each longitudinal edge and are each open toward a respective longitudinal side of the wiper strip (14), and these two spring strips (36, 38) are connected to each other by at least two crosspieces (36, 38) disposed spaced apart from each other in the longitudinal direction, wherein each crosspiece (36, 38) has a middle section (42) which extends spaced a distance (44) apart from the upper band surfaces (11) of the spring strips (28, 30), producing bridge-like crosspieces defining a bridge width, wherein the distance (34) between the two longitudinal strips (28, 30) is less than the bridge width (46),

wherein the crosspieces (36, 38) are attached to the upper band surfaces (11) of the two spring strips (28, 30), wherein the crosspieces (36, 38) are welded to the two spring strips (28, 30), so that the wiper strip from an end of the support element is insertable linearly between the longitudinal edges of the spring strips facing one another,

wherein the wiper strip (100), which has a uniform cross section over its longitudinal span, has a strip-like wiper lip (101), which can be placed against the window and which, by means of a narrow intermediary strip (102) that is formed by groove-like constrictions (106) on opposite sides, is connected to a covering strip (104) secured to the support element (12), and wherein each of the two adjacent inner longitudinal edges (32) of the spring strips (28, 30) is disposed in one of the two groove-like constrictions (106) of the wiper strip (100),

wherein the lateral defining surfaces (108, 110) of the groove-like constrictions (106) diverge from the intermediary strip (102) to the longitudinal sides of the wiper strip, and

wherein both lateral defining surfaces (108, 110) of the groove-like constrictions (106) have a circular curvature, viewed in cross section.

15. A wiper blade (10) for windows of motor vehicles, comprising:

an elongated, rubber-elastic wiper strip (14), which can be placed against the window (22) and is connected to an elongated, spring-elastic support element (12) so that their longitudinal axes are parallel, which support element (12) is directly connected to a device for connecting the wiper blade to a driven wiper arm (18), wherein the support element (12) has two band-like spring strips (28, 30), which are situated in a plane that is disposed in front of the window, essentially parallel to the window, and whose, lower band surfaces (13) are oriented toward the window and whose adjacent, inner longitudinal edges (48), which are disposed spaced a distance (34) apart from each other, each protrude into a respective longitudinal groove (54, 56, or 106), which grooves are associated with each longitudinal edge and are each open toward a respective longitudinal side of the wiper strip (14), and these two spring strips (36, 38) are connected to each other by at least two crosspieces (36, 38) disposed spaced apart from each other in the longitudinal direction, wherein each crosspiece (36, 38) has a middle section (42) which extends spaced a distance (44) apart from the upper band surfaces (11) of the spring strips (28, 30), producing bridge-like crosspieces (36, 38) defining a bridge with, where the distance (34) between the two longitudinal strips (28, 30) is less than the bridge width (46),

wherein the wiper strip (100), which has a uniform cross section over its longitudinal span, has a strip-like wiper lip (101), which can be placed against the window and which, by means of a narrow intermediary strip (102) that is formed by groove-like constrictions (106) on opposite sides, is connected to a covering strip (104) secured to the support element (12), and in that each of the two adjacent inner longitudinal edges (32) of the spring strips (28, 30) is disposed in one of groove-like constrictions (106) of the wiper strip (100),

wherein the lateral defining surfaces (108, 110) of the groove-like constrictions (106) diverge from the intermediary strip (102) to the longitudinal sides of the wiper strip and

wherein both lateral defining surfaces (108, 110) of the groove-like constrictions (106) have a circular curvature, viewed in cross section.

* * * * *

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CIVIL COVER SHEET

The JS-44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. (SEE INSTRUCTIONS ON THE REVERSE OF THE FORM.)

I. (a) PLAINTIFFS

ROBERT BOSCH LLC,

(b) County of Residence of First Listed Plaintiff _____
(EXCEPT IN U.S. PLAINTIFF CASES)

DEFENDANTS

JAMAK FABRICATION-TEX LTD. d/b/a JAMAK FABRICATION, INC. also d/b/a JAMAK GLOBAL WIPERS,

County of Residence of First Listed Defendant
(IN U.S. PLAINTIFF CASES ONLY)
NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE LAND INVOLVED.

(c) Attorney's (Firm Name, Address, and Telephone Number)

Richard L. Horwitz (#2246)/David E. Moore (#3983)
Potter Anderson & Corroon LLP
1313 N. Market Street
Wilmington, Delaware 19801 (302) 984-6000

Attorneys (If Known)

II. BASIS OF JURISDICTION (Place an "X" in One Box Only)

- [ ] 1 U.S. Government Plaintiff
- [x] 3 Federal Question (U.S. Government Not a Party)
- [ ] 2 U.S. Government Defendant
- [ ] 4 Diversity (Indicate Citizenship of Parties in Item III)

III. CITIZENSHIP OF PRINCIPAL PARTIES (Place an "X" in One Box for Plaintiff and One Box for Defendant)
(For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	[ ] 1	[ ] 1	Incorporated *or* Principal Place of Business In This State	[ ] 4	[ ] 4
Citizen of Another State	[ ] 2	[ ] 2	Incorporated *and* Principal Place of Business In Another State	[ ] 5	[ ] 5
Citizen or Subject of a Foreign Country	[ ] 3	[ ] 3	Foreign Nation	[ ] 6	[ ] 6

IV. NATURE OF SUIT (Place an "X" in One Box Only)

CONTRACT
- [ ] 110 Insurance
- [ ] 120 Marine
- [ ] 130 Miller Act
- [ ] 140 Negotiable Instrument
- [ ] 150 Recovery of Overpayment & Enforcement of Judgment
- [ ] 151 Medicare Act
- [ ] 152 Recovery of Defaulted Student Loans (Excl. Veterans)
- [ ] 153 Recovery of Overpayment of Veteran's Benefits
- [ ] 160 Stockholders' Suits
- [ ] 190 Other Contract
- [ ] 195 Contract Product Liability

REAL PROPERTY
- [ ] 210 Land Condemnation
- [ ] 220 Foreclosure
- [ ] 230 Rent Lease & Ejectment
- [ ] 240 Torts to Land
- [ ] 245 Tort Product Liability
- [ ] 290 All Other Real Property

TORTS

PERSONAL INJURY
- [ ] 310 Airplane
- [ ] 315 Airplane Product Liability
- [ ] 320 Assault, Libel & Slander
- [ ] 330 Federal Employers' Liability
- [ ] 340 Marine
- [ ] 345 Marine Product Liability
- [ ] 350 Motor Vehicle
- [ ] 355 Motor Vehicle Product Liability
- [ ] 360 Other Personal Injury

PERSONAL INJURY
- [ ] 362 Personal Injury—Med. Malpractice
- [ ] 365 Personal Injury—Product Liability
- [ ] 368 Asbestos Personal Injury Product Liability

PERSONAL PROPERTY
- [ ] 370 Other Fraud
- [ ] 371 Truth in Lending
- [ ] 380 Other Personal Property Damage
- [ ] 385 Property Damage Product Liability

CIVIL RIGHTS
- [ ] 441 Voting
- [ ] 442 Employment
- [ ] 443 Housing/ Accommodations
- [ ] 444 Welfare
- [ ] 440 Other Civil Rights

PRISONER PETITIONS
- [ ] 510 Motions to Vacate Sentence
- Habeas Corpus:
- [ ] 530 General
- [ ] 535 Death Penalty
- [ ] 540 Mandamus & Other
- [ ] 550 Civil Rights
- [ ] 555 Prison Condition

FORFEITURE/PENALTY
- [ ] 610 Agriculture
- [ ] 620 Other Food & Drug
- [ ] 625 Drug Related Seizure of Property 21 USC
- [ ] 630 Liquor Laws
- [ ] 640 R.R. & Truck
- [ ] 650 Airline Regs.
- [ ] 660 Occupational Safety/Health
- [ ] 690 Other

LABOR
- [ ] 710 Fair Labor Standards Act
- [ ] 720 Labor/Mgmt. Relations
- [ ] 730 Labor/Mgmt.Reporting & Disclosure Act
- [ ] 740 Railway Labor Act
- [ ] 790 Other Labor Litigation
- [ ] 791 Empl. Ret. Inc. Security Act

BANKRUPTCY
- [ ] 422 Appeal 28 USC 158
- [ ] 423 Withdrawal 28 USC 157

PROPERTY RIGHTS
- [ ] 820 Copyrights
- [x] 830 Patent
- [ ] 840 Trademark

SOCIAL SECURITY
- [ ] 861 HIA (1395ff)
- [ ] 862 Black Lung (923)
- [ ] 863 DIWC/DIWW (405(g))
- [ ] 864 SSID Title XVI
- [ ] 865 RSI (405(g))

FEDERAL TAX SUITS
- [ ] 870 Taxes (U.S. Plaintiff or Defendant)
- [ ] 871 IRS—Third Party 26 USC 7609

OTHER STATUTES
- [ ] 400 State Reapportionment
- [ ] 410 Antitrust
- [ ] 430 Banks and Banking
- [ ] 450 Commerce/ICC Rates/etc.
- [ ] 460 Deportation
- [ ] 470 Racketeer Influenced and Corrupt Organizations
- [ ] 810 Selective Service
- [ ] 850 Securities/Commodities/ Exchange
- [ ] 875 Customer Challenge 12 USC 3410
- [ ] 891 Agricultural Acts
- [ ] 892 Economic Stabilization Act
- [ ] 893 Environmental Matters
- [ ] 894 Energy Allocation Act
- [ ] 895 Freedom of Information Act
- [ ] 900 Appeal of Fee Determination Under Equal Access to Justice
- [ ] 950 Constitutionality of State Statutes
- [ ] 890 Other Statutory Actions

V. ORIGIN (PLACE AN "X" IN ONE BOX ONLY)

[x] 1 Original Proceeding [ ] 2 Removed from State Court [ ] 3 Remanded from Appellate Court [ ] 4 Reinstated or Reopened [ ] 5 Transferred from another district (specify) [ ] 6 Multidistrict Litigation [ ] 7 Appeal to District Judge from Magistrate Judgment

VI. CAUSE OF ACTION (Cite the U.S. Civil Statute under which you are filing and write brief statement of cause. Do not cite jurisdictional statutes unless diversity.)

35 U.S.C § 271, et seq. for patent infringement and 28 U.S.C. §§ 1331 and 1338.

VII. REQUESTED IN COMPLAINT: [ ] CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23 **DEMAND $** _____ CHECK YES only if demanded in complaint: **JURY DEMAND:** [x] Yes [ ] No

VIII. RELATED CASE(S) IF ANY (See instructions): JUDGE _____ DOCKET NUMBER _____

DATE
10/26/2007

SIGNATURE OF ATTORNEY OF RECORD

FOR OFFICE USE ONLY

RECEIPT # _____ AMOUNT _____ APPLYING IFP _____ JUDGE _____ MAG. JUDGE _____

JS 44 Reverse (Rev. 12/96)

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS-44

Authority For Civil Cover Sheet

The JS-44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

I. (a) Plaintiffs-Defendants. Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.

(b.) County of Residence. For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)

(c) Attorneys. Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".

II. Jurisdiction. The basis of jurisdiction is set forth under Rule 8(a), F.R.C.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.

United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States, are included here.

United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.

Federal question. (3) This refers to suits under 28 U.S.C. 1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, an act of Congress or a treaty of the United States. In cases where the U.S. is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.

Diversity of citizenship. (4) This refers to suits under 28 U.S.C. 1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below; federal question actions take precedence over diversity cases.)

III. Residence (citizenship) of Principal Parties. This section of the JS-44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.

IV. Nature of Suit. Place an "X" in the appropriate box. If the nature of suit cannot be determined, be sure the cause of action, in Section IV below, is sufficient to enable the deputy clerk or the statistical clerks in the Administrative Office to determine the nature of suit. If the cause fits more than one nature of suit, select the most definitive.

V. Origin. Place an "X" in one of the seven boxes.

Original Proceedings. (1) Cases which originate in the United States district courts.

Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441. When the petition for removal is granted, check this box.

Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.

Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.

Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a) Do not use this for within district transfers or multidistrict litigation transfers.

Multidistrict Litigation. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407. When this box is checked, do not check (5) above.

Appeal to District Judge from Magistrate Judgment. (7) Check this box for an appeal from a magistrate judge's decision.

VI. Cause of Action. Report the civil statute directly related to the cause of action and give a brief description of the cause.

VII. Requested in Complaint. Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.Cv.P.

Demand. In this space enter the dollar amount (in thousands of dollars) being demanded or indicate other demand such as a preliminary injunction.

Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.

VIII. Related Cases. This section of the JS-44 is used to reference related pending cases if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

Date and Attorney Signature. Date and sign the civil cover sheet.

AO FORM 85 RECEIPT (REV. 9/04)

United States District Court for the District of Delaware

Civil Action No. - 07 - 676 -

ACKNOWLEDGMENT OF RECEIPT FOR AO FORM 85

NOTICE OF AVAILABILITY OF A UNITED STATES MAGISTRATE JUDGE TO EXERCISE JURISDICTION

I HEREBY ACKNOWLEDGE RECEIPT OF 2 COPIES OF AO FORM 85.

10/26/07
(Date forms issued)

x Mike Bobish
(Signature of Party or their Representative)

X Mike Bobish
(Printed name of Party or their Representative)

Note: Completed receipt will be filed in the Civil Action